ISSUE 45 | AUGUST 2018

ENERGY COMMUNIQUE

EDITORIAL

Empowering Rural Citizen's of Nepal through Mini Grids

Nepal has a tremendous hydropower potential. It has been estimated that Nepal has approximately 40,000 MW of economically feasible hydropower potential. However, presently Nepal has approximately 900 MW installed capacity. Nepal government aims to generate at least 10,000 MW in next ten years. Nepal government has given its top priority for energy security by developing hydropower plants rapidly. Presently, only 65% of the Nepal's population has access to national grid. Therefore, distributed renewable energy technologies like Mini Grids / Micro Grids are cost effective alternatives for rural electrification in Nepal.

Mini Grids

There are over 1000 mini hydro power plants; over 2500 micro hydro plants and over 100000 mini solar systems are already installed in remote area of Nepal. Many studies have shown that many of micro/mini hydro plants are not able to generate power for pick demands, where as many other micro/mini hydro plants are under utilized. It has also been realized that in case of failure of one micro/mini hydro plants, there is no alternatives except living in dark. Hence, It is a huge challenge to provide reliable power supply in remote area of Nepal with isolated mini/micro power plants having no national grid connectivity.

It might not be economically feasible to connect through national grid to the isolated mini/micro hydro plants. Therefore, distributed renewable energy technologies like Mini Grids / Micro

Mr. Mahesh Mahato
Managing Director,
Cosmic Electrical Engineering Associates Pvt. Ltd.
An EDC Member Organization

INSIDE THIS ISSUE:

Grids are cost effective alternatives for rural electrification in Nepal. Interconnection of existing micro/mini hydro power plants, solar system and wind plants would further enhance the reliability, quality and availability of supplied electricity.

Benefits of Mini Grids

As per various reports, benefits (technical, financial and social) of Mini Grids are listed below:

Technical benefits

- Reliability, quality and availability of electricity enhanced
- Capacity factor increased
- Overall safety and safety to operator during operation enhanced
- Possibilities to operate large load
- Facilitates interconnections with central grid
- Operational performance of equipment increased
- Computer education, internet service become possible

Financial benefits

- Increase in income of individual micro hydro / home solar
- New job creation
- Increase in entrepreneurial activities
- Increase quality of peoples life

Social benefits:

- Unite the community
- Social harmony increases

Taplejung Mini Grid Project (a case)

Recently, Cosmic Electrical as an EPC contractor in the leadership of the Ministry of Environment Science and Technology, Alternative Energy Promotion Center, Renewable (RERL) funded by World Bank has constructed 11kV Mini grid in Taplejung. Eight numbers of micro hydro power plants are connected with 11 kV transmission line grid with a total length of 41kM in Taplejung district. The total installed capacity of the plants is 901 kW benefiting 3574 households in the mini grid cluster and 1704 households in the cluster of Taplejung bazaar. After interconnection; load factor, plant factor and utilization factor are to be improved to 71.91%, 61.13% and 100% compared to 49.79%, 20.44%, 50.31% respectively at present. It is expected that the monthly income of each power plant functional group shall be doubled of at present. This is one of the most innovative and unique concepts in South Asian Region for distributed energy grid to enhance quality of people's life in the community.

Thus, it is highly recommended to construct Mini Girds in other parts of Nepal for safe, reliable and sustainable supply of energy. This kind of projects will definitely enhance quality of people's life.

EDC ACTIVITIES

EDC delegation meets Head of German Development Cooperation in Nepal, Embassy of Germany

Edc delegation led by Mr. Kushal Gurung, Head of Executive Committee, EDC and Ms. Itnuma Subba, CEO, EDC had a coffee meeting with Dr Claudia Hiepe, Head of German Development Cooperation in Nepal, Embassy of Germany on 9th August, 2018 to further explore the possible cooperation in doing a Nepal Power Investment Road show in Germany or in Europe.

EDC co-organized Interaction Session on "Power Sector Cooperation between Bangladesh and Nepal"

Embassy of Bangladesh to Nepal in partnership with Energy Development Council (EDC) and Independent Power Producer's Association, Nepal (IPPAN) organized an Interaction Session on "Power Sector Cooperation Between Bangladesh and Nepal" on August 10th 2018 at Hotel Hyatt Regency, Bouddha, Kathmandu. H.E Mr. Nasrul Hamid, MP, Honorable State Minister, Ministry of Power, Energy and Mineral Resources of Bangladesh, People's Republic of Bangladesh was the Chief Guest of the program and he in his Keynote address deliberated on the achievements made in Bangladeshi powers sector and emphasized that cross border electricity through regional cooperation would play a pivotal role in development of the SAARC region.

Mr. Shailendra Guragain, President of IPPAN welcomed the attendees followed by presentation on analysis on power shortcoming in Bangladesh and how Nepal could fill Bangladesh's energy demand from Mr. Khadga Bahadur Bisht, Immediate Past President of IPPAN. Mr. Maha Prasad Adhikari , CEO, Office of Investment Board delivered a presentation on "Investment Opportunities in Power Sector for Bangladesh in Nepal". The closing remarks was delivered by Ms. Mashfee Binte Shams, Ambassador of People's Republic of Bangladesh to Nepal.

EDC ACTIVITIES

Head of Executive Committee, EDC interviewed by Business Plus

Mr. Kushal Gurung, Head of Executive Committee, EDC along with Er. Madhu Prasad Bhetwal, Joint Secretary, Water and Energy Commission Secretariat was interviewed by Business Plus Television which aired on 19th August, 2018. The program was mostly focused on the possibility of developing energy sector cooperation between Nepal and Bangladesh and discussed about series of issues relating to renewable energy in Nepal. Mr. Kushal Gurung stated that Bangladesh is wiling to invest in Nepal to meet their current energy demand of around 9,000 MW. He said that it can be estimated that trilateral talk about cross border energy trade have already been done with positive feedback as observed from the interaction program held where H.E Mr. Nasrul Hamid, MP, Honorable State Minister, Ministry of Power, Energy and Mineral Resources of Bangladesh, People's Republic of Bangladesh was the Chief Guest. Mr. Gurung also stated that there is high possibility of storage solar project in Nepal with potential of more than 15,000 MW.

https://www.youtube.com/watch?v=KWbXI6iqFZU

EDC organized a Interaction Session on " Solar Net Metering—Current State of policy and guideline"

EDC organized an Interaction program on "Solar Net Metering- Current State of Policy and Guideline" on 22nd August, 2018 at Baber Mahal Revisited, Kathmandu. Honorable Mr. Basanta Kumar Nembang, M.P, Government of Nepal was the chief guest of the program. Mr. Nembang assured to help promote solar net metering. Mr. Kulman Ghising, Managing Director of Nepal Electricity Authority delivered special remarks where he emphasized on the fact that Net metering would help each of the interested household to generate revenue thereby contributing to the economic growth of the country. He also added that Net metering is the key priority of Government where he mentioned that each house is a powerhouse and each village is an energy village. Mr. Aashish Chalise, Executive Committee Member of EDC delivered a presentation explaining that 600 MW of solar rooftop energy is technically feasible In Kathmandu Valley and need of clear guidelines and procedural steps for realizing it.

EDC ACTIVITIES

TenderNotice.com.np

Tender, Bids and Notices related to Hydro and Energy segments in Nepal

Date : 1st Aug 2018 - 31st Aug 2018

S.No.	Notice Publisher	Description	Published Date	Notice Category	Product Service
1	Nepal Electricity Authority, Generation Directorate, Chamelya Hydroelectric Project, Darchula	Design, Manufacture, Shop Test, Supply, Installation, Testing, Commissioning and Handover of Trash Rack Cleaning Machine including Trash Trolley and Accessories Arrangement for Trash Disposal System	8/31/2018	Tender	Electronics/ Electric Utilities
2	Raghuganga Hydropower Limited, Rahughat Hydroelectric Project, Kathmandu	Amendment Notice	8/27/2018	Amendment Notice	Other Product/ Services
3	Ministry of Energy, Water Resources and Irrigation, Department of Hydrology and Meteorology, Building Resilience to Climate Related Hazards Project (BRCH), Naxal, Kathmandu	Amendment Notice	8/23/2018	Amendment Notice	Other Product/ Services
4	Ministry of Energy, Water Resources and Irrigation, Department of Hydrology and Meteorology, Naxal, Kathmandu	Amendment Notice	8/22/2018	Amendment Notice	Other Product/ Services
5	Tamakoshi Jalvidyut Company Limited, Tamakoshi V Hydroelectric Project, Thapathali, Kathmandu	Amendment Notice	8/21/2018	Amendment Notice	Other Product/ Services
6	Relyukai Eiko Masunaga Eye Hospital, Kavrepalanchowk	Procurement of Medical Equipment	8/20/2018	Tender	Health/ Medical
7	Nyaya Health Nepal, Bayalpata Hospital, Achham	Supply and Delivery of Lab Supplies and Reagent, Medical Consumables, and Medicine	8/17/2018	Tender	Health/ Medical
8	Nepal Electricity Authority, Kaligandaki 'A' Hydropower Station, Syangja	Plant Control System Upgrading Work	8/16/2018	Tender	Electronics/ Electric Utilities

EDC ACTIVITIES

9	SJVN Arun-3 Power Development Company (P) Ltd., Khandbari, Nepal	Supply and Delivery of Toner/Cartridge for Printer and Photocopiers, Construction of Temporary Seismological Monitoring Stations etc.	8/13/2018	Tender	Other Product/ Services
10	Vidhyut Utpadan Company Limited, Buddhanagar, Kathmandu	Procurement of Vehicle	8/12/2018	Tender	Automotive / Vehicles

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www.TenderNotice.com.np

MEDIA COVERAGE

The Himalayan

EPC Plus Finance

Sushrey Nepal
Kathmandu

EPC plus finance

EPC CONTRACTORS HAVE BETTER ACCESS TO LOW COST FINANCING, INCLUDING EXPORT-IMPORT

Over the years, the construction and infrastructural modality has witnessed a visible shift of the risk of time and cost from owner-managed projects to the contractor with the responsibility of designing, procurement of material and construction transferred to the contractor. This model in short is referred to as Engineering, Procurement and Construction (EPC) arrangement. The contractor is fully responsible for Engineering, Procurement and Construction necessary for the project. If in the EPC arrangement, the contractor further undertakes to finance the project, then such an arrangement is called EPC plus (+) F. The '+F' implies that the contractor is additionally required to arrange the finance required to construct the undertaking.

The EPC+F model arguably receives prominence because of the adoption of this method by large Chinese construction companies, banks and insurance firms. Chinese contractors have been very forthcoming to arrange money from Chinese banks to construct and deliver infrastructure facilities in developing countries and least developed countries. In the EPC+F contract, project financing is generally tied and provided by a foreign country or banks of the foreign country/development agencies affiliated to a foreign country. The host government is responsible for arranging the counterpart funding and for providing sovereign guarantees to the project and lenders. The funds will be mobilised in the form of soft or commercial loans as per the requirements of the project, under the terms and conditions agreed with the government. Because in an EPC-F contract, the EPC contractor will be responsible to finance a large portion of the project, it is considered pragmatic only when EPC contractors have better access to low cost financing, including Export-Import (EXIM Financing).

hydrohighlight

PUBLIC SECTOR OWNED PROJECTS

The question now arises as to how to select an EPC contractor who will be vested with the right to arrange funding requirements of a project. What should be the selection criteria of an EPC+F Contractor? Typically, the owner of a large infrastructure project generally is Public Sector Company or an authority in the host country responsible for project development. Hence another question arises about whether award of a particular project will need an open competitive bidding or sole source procurement can be justified. Or in simpler words should Public Procurement Act (PPA), 2063 (2006) be followed to conduct the tender?

The PPA cites that a public entity shall make procurements by inviting open bids, and provide equal opportunity to qualified bidders to participate in such procurement process without any discrimination. The Act further emphasises that only the lowest substantially responsive bid shall be preferred. The same public procurement statute defines 'bid' as a document setting out price, proposal or rate submitted by the bidder in a specified format. However, the selection criteria prescribed in the Public Procurement Act and selection criteria for the EPC+F contractor do not necessarily match. The bidding process outlined in the PPA requires the price of contract to be set out in the bidding documents, whereas selection criteria for an EPC+F arrangement leaves the price submission, the tenor and the interest of the loan to contractor. In short, the PPA does not envisage the selection process for awarding contract under EPC+F arrangement which could make bidding process for EPC+F under the said act infeasible. Further, the selection criteria for EPC+F are quite restrictive because it disables a contractor not having access to finance from banks out of the competition.

EPC+F FOR PRIVATE SECTOR PROJECTS

To reiterate, the general structure of EPC+F in Nepal is such that the contractor shall arrange for the finances, while promoters of the private sector developer company will manage rest of the capital themselves. This consecutively leads to an important question, whether the capital availed through the foreign contractor will be channelised in the form of an FDI or not. Though we have witnessed declarations made in the past to bring in the finance as FDI to develop a project in EPC+F modality, the disorientation is sustained because our law itself doesn't definitively assert the legalities for the same. This further supplements another concern, how shall the foreign contractor receive the payment from the private sector in Nepal? In addition to it, a due cognisance should also be taken corresponding to the liquidity of our banks, since we have a recent antecedent that our banks had a difficult time managing funds for repatriation of the dividend. If not taken into consideration, this might even have a severe effect on the balance of payment of the nation when the entire investment has to be returned at once.

In absence of a legal criterion in this regard, Nepal is still in search of an established machinery to regulate the EPC+F finance modality.

The growing interest in arranging finance for Nepal's infrastructure and hydroelectric capabilities cannot be underscored. In a way EPC+F model allows easy access to finance required to build multi-million infrastructure projects. However, EPC+F model in Nepal can swiftly take-off in case of public sector owned infrastructure projects only if the award process is competitive and robust and in case of private sector driven projects if the remittance of payment to the foreign contractor is not effected by legal impediments.

The author is Law Associate at Abhinawa Law Chambers, an EDC member organisation

Source: http://epaper.thehimalayantimes.com/index.php?mod=1&pgnum=22&edcode=71&pagedate=2018-8-26&type=#

Nepali Times

EDC's Solar Net Metering Discussion

Energy Development Council (EDC) organized an interaction program on "Solar Net Metering-Current State of Policy and Guideline" at Baber Mahal Revisited on Wednesday. In presence of Member of Parliament Basanta Kumar Nembang, Head of Executive Committee of EDC Kushal Gurung and Managing Director of Nepal Electricity Authority Kulman Ghising discussed on the pros and challenges of solar net metering with solar energy stakeholders.

Aashish Chalise, Executive Committee Member of EDC presented few topics related to net metering. He explained, "The potential of rooftop net metering is high in Nepal. Technically, 600MW solar rooftop energy is feasible in Kathmandu Valley itself. However, there are challenges which can be overcome if government and stakeholders work accordingly."

Mr. Kul Man Ghising delivered special remarks on solar net metering and emphasized on its capacity to generate revenue from

each household, thereby contributing to the economic growth of the country. He added, "Government of Nepal has not limited net metering in papers but as a key priotity to empower every household. We have come up with the slogan 'each house is a powerhouse and each village is an energy village'."

Senior Divisional Engineer at Ministry of Energy, Water Resource and Irrigation Raju Maharjan, and Director of Energy Efficiency and Loss Reduction Department at NEA Ramji Bhandari addressed the questions regarding net metering payment system put forward by participants.

At the program, Ghising announced that net metering billing system is under discussion and not yet approved by NEA Board and the system will be done in terms of price instead of unit, at the end of the year.

The program organizer Energy Development Council is the only national level body that holistically represents the interest of the entire energy sector of Nepal. The EDC umbrella consists of developers, associations, consumers, financiers and funders, consumer institutions, private and government contractors all involved in hydropower, solar, wind and other renewable, generating more than 80% of the nation's total electricity.

Source: https://www.nepalitimes.com/business/edcs-solar-net-metering-discussion/

NEPAL'S SCENARIO

Nepal's first e-bus to be operated in the valley within three months

"Battery-run e-bus is set to come into operation on the roads of the Kathmandu Valley"

For the first time in Nepal, a battery-run e-bus is set to come into operation on the roads of the Kathmandu Valley. The public would get to commute in the bus within the next three months.

The bus is developed by CNC Brand of China and will be operated by International Green Developers Nepal Pvt Ltd, the producer of Gorkha Eco Panels. The company said they will operate the bus only in the valley during the first phase. After that, they plan to operate the electric bus across the country.

Gorkha Eco Panels would be the authorized dealer of the bus across the country as they signed an agreement with CNC, which is based in China's Wuhan Province. Krishnabhakta Duwal, Chief Executive Officer (CEO) of Gorkha Eco Panels, confirmed that they plan to bring the bus into operation within three months.

"For that, we are currently making all the necessary preparations. We are preparing to bring the bus into Nepal at the earliest," he said. "Furthermore, we are studying which route will be the best one to operate the vehicle. We are also doing feasibility studies on location of its charging station."

It would take three hours for the bus's battery to get charged fully. Once fully-charged, the bus can run 250 kilometers.

The company is planning to bring two types of buses in the first phase. The first type will be 10.5 meters in length, with 40 seats and the capacity to accommodate up to 90 people. Another type is six meters in length, with 15 seats and the capacity to accommodate 35 people, said CEO Dulal.

While private electric cars from Korea and India are already operating in Nepal, this will be the first time for electric public vehicles.

Source: https://myrepublica.nagariknetwork.com/news/nepal-s-first-e-bus-to-be-operated-in-the-valley-within-three-months-1/?categoryId=opinion

GLOBAL PERSPECTIVE

Ethiopia opens Africa's first waste-to-energy facility

Ethiopia is home to the continent's first waste-to-energy facility after a launch of the Reppie project over the weekend. President Mulatu Teshome and other high level government officials were present for the event.

The facility is built on the Koshe landfill site located on the outskirts of the capital Addis Ababa. It was launched in 2013 as a municipal solid waste incarceration plant.

It is supposed to take 1,400 tons of waste daily which figure comes up to about 80% of refuse generated by Addis Ababa. It will go on to supply the capital with 30% household electricity needs whiles conforming to global standards on air emissions.

It was built by Cambridge Industries Limited (CIL), British & Island with Chinese partner contractors. It also involved Danish consultants Ramboll. It was fully funded by government with the overall cost put at 2.6 billion birr.

In 2017, the United Nations environment programme website reported that the project was to be launched in early 2018.

The Koshe dump site that metamorphosed to the historic reppie project.

The Koshe dump site which had been transformed to the Reppie project served Addis Ababa for about 50 years made news headlines in March this year after a landslide at the premises killed about 114 people – residents and scavengers – according to government records.

In the wake of the incident, the government planned relocation for persons who lived on the large area said to be the size of 36 football pitches.

They moved to establish the plant with the broader objective of transforming the site and Addis Ababa's approach to dealing with waste.

At the inauguration of Reppi Waste-to-Energy Project worth al-

most 3 Billion Birr. Evident is the influence of China. Hope knowledge transfer is part of such a mega deal and not a one way street.

— Samuel Getachew (GetachewSS) August 19, 2018

About the Reppie project – U.N. Environment

The project is the result of a partnership between the Government of Ethiopia and a consortium of international companies: Cambridge Industries Limited (Singapore), China National Electric Engineering and Ramboll, a Danish engineering firm.

The consortium was established to design, construct and in some cases own waste-to-energy facilities customized for Sub-Saharan Africa. Reppie is the first of what the consortium hopes will be a series of such facilities in major cities across the region.

"The Reppie project is just one component of Ethiopia's broader strategy to address pollution and embrace renewable energy across all sectors of the economy," said Zerubabel Getachew, Ethiopia's deputy permanent representative to the U.N. in Nairobi.

"In waste-to-energy incineration plants, rubbish is burned in a combustion chamber. The resulting heat is used to boil water until it turns to steam, which drives a turbine generator that produces electricity," the U.N. website explains.

The energy generation system is more popular in Europe and in cities with limited land. France leads in the area with 126 waste-to-energy plants whiles Germany and Italy follow with 99 and 40 respectively.

Here, "waste-to-energy" incineration is a quadruple win: saving land space, generating electricity, preventing the release of toxic chemicals into groundwater, and reducing the release of methane — a potent greenhouse gas generated in landfills — into the atmosphere.

Addis Ababa's garbage headache – Addis Standard

Addis Ababa like any booming African city has its fair share of garbage headache. The Addis Standard in holistic analysis of the city highlighted that plight in an article titled: 'Addis Abeba: a city struggling under the weight of its failures triggers fresh minefield.'

A portion on challenges relative to garbage read: "Turn to another topic. A city with one of the highest population densities in Africa (an estimated 5,165 persons per square kilometer), is imploding from the pressure of urban migration, which is manifested in housing crisis that was characterized as "70% informal" by the UN-HABITAT. Unemployment rate stands at 21.2%.

"Addis Abeba continues to be a city that does not have a modest way to dispose its garbage, a draining cost to the basic dignity of the city's rich, poor and vulnerable alike."

As a city badly in need of land, the capital in June this year outdoored Africa's first smart parking facility. The Smart Megenagna Parking is said to hold 90 cars in a space that ordinarily will hold nine cars.

The $2.2m steel facility is primarily meant to ease vehicular parking and to keep with global trends in the area of vehicle safety. It is Africa's first such facility and is in one of the continent's fastest growing cities.

Source: https://www-africanews-com.cdn.ampproject.org/c/www.africanews.com/amp/2018/08/20/the-reppie-project-ethiopia-opens-africa-s-first-waste-to-energy-facility/

Air pollution is making us dumber, study shows

Air pollution could be more damaging to our health than previously thought, according to a new study, which found that prolonged exposure to dirty air has a significant impact on our cognitive abilities, especially in older men.

According to the study published Tuesday in the Proceedings of the National Academy of Sciences, breathing polluted air causes a "steep reduction" in scores on verbal and math tests.

Researchers at the International Food Policy Research Institute (IFPRI) examined data from the national China Family Panel Studies longitudinal survey, mapping the cognitive test scores of nearly 32,000 people over the age of 10 between 2010 and 2014 against their exposure to short- and long-term air pollution.

The team found that both verbal and math scores "decreased with increasing cumulative air pollution exposure," with the decline in verbal scores being particularly pronounced among older, less educated men.

"The damage air pollution has on aging brains likely imposes substantial health and economic cost, considering that cognitive functioning is critical for the elderly to both running daily errands and making high-stakes economic decisions," study author Xiaobo Zhang of Peking University said.

Cognitive decline or impairment, which could be caused by air pollution according to the study, are also potential risk factors in developing Alzheimer's disease or other forms of dementia.

Pollution exposure was measured using data on air quality, which includes three air pollutants: sulfur dioxide, nitrogen dioxide and particulate matter smaller than 10 micrometers in diameter.

Air pollution linked to 3.2 million new diabetes cases in one year.

Poor hardest hit

While the study adds to the already numerous health concerns regarding air pollution, it will be of particular concern to developing nations, whose smoggy cities could be hampering national economic development.

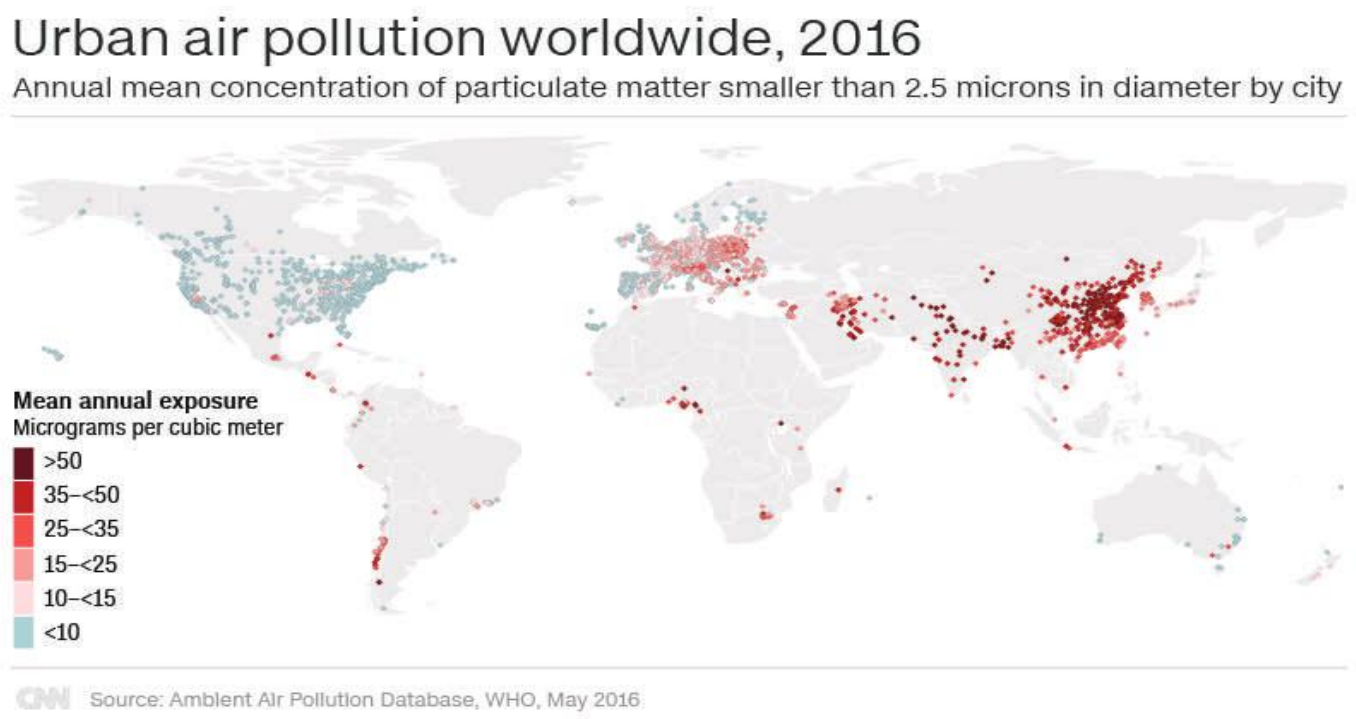
"The damage on cognitive ability by air pollution also likely impedes the development of human capital. Therefore, a narrow focus on the negative effect on health may underestimate the total cost of air pollution," Zhang said. "Our findings on the damaging effect of air pollution on cognition imply that the indirect effect of pollution on social welfare could be much larger than previously thought."

According to the World Health Organization (WHO), nine out of every 10 people on the planet breathe air containing a high level of pollutants, with the worst affected regions being Africa and Asia.

Of the world's top 20 most polluted cities, as measured by the WHO, all are in developing countries. Almost all cities in low to middle-income countries with more than a million residents fail to meet minimum WHO guidelines.

City dwellers aren't the only ones breathing in smog either, a study in January found that 75% of deaths related to air pollution in India were in rural areas.

While some countries, including China, are taking measures



to address air pollution, this will also potentially effect economic growth.

Meanwhile, the wealthiest city dwellers are able to buy their way out of smog.

In Beijing, the rich are specially designing their homes and buying appliances to filter out pollutants in their air and water, while poorer residents are stuck breathing in the unfiltered smog, affecting not only their health but also, according to the new study, their cognitive abilities.

Source: https://edition.cnn.com/2018/08/27/health/air-pollution-cognitive-abilities-intl/index.html?no-st=1535953180

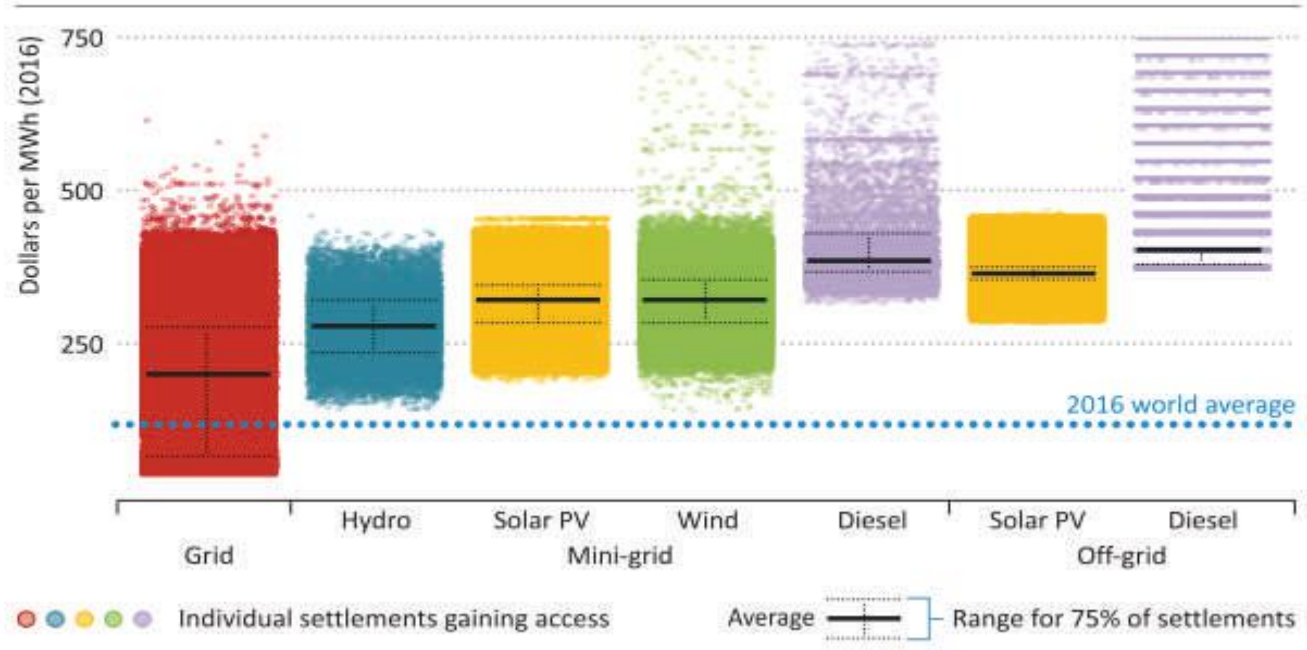
How mini-grids could solve global energy poverty

More than 300 million people in India lack access to electricity, while in Sub-Saharan Africa, twice that many live without power. With population growth forecast to exceed connection rates, "energy poverty" is expected to worsen before it improves.

For decades, rural communities in frontier economies have waited in vain for government-supplied electricity to arrive. But today, new technologies – coupled with cheaper solar panels, better batteries, and mobile payment systems – are changing how power is produced and distributed. With so-called "mini-grids" – smaller, localized power utilities – independent producers can electrify remote communities faster and more cheaply than traditional utilities can. The challenge is convincing politicians, financiers, and vested interests of the value in going decentralized.

Tackling rural electrification with mini-grids is not a new idea; communities from the United States to Cambodia have long used this approach to weave local infrastructure into regional or national grids. And for energy starved communities

Figure 2.6 ▷ Levelised cost of electricity (LCOE) for electricity access solutions in the New Policies Scenario to 2030



mini-grids are a potential game changer. According to the International Energy Agency, decentralized solutions such as mini-grids are the most cost-effective option to deliver electricity to more than 70% of the unconnected, provided that projects can attract new sources of capital. With $300 billion in investment and supportive policies, the IEA says, mini-grids could serve 450 million people by 2030.

Simply put, compared to main-grid solutions, mini-grids are easier to assemble and deploy in hard-to-reach communities and deliver electricity more reliably. By powering health clinics, schools, and local businesses, including in the agriculture industry, such grids would help create more vibrant and prosperous local economies. In unelectrified areas that are vulnerable to climate change, natural disasters, and economic migration, mini-grids are often the only option.

To be sure, mini-grids are not meant to operate in isolation for perpetuity; they are at their best when feeding power into larger distribution networks. But until larger grids arrive, rural areas in developing countries can, and should, go it alone.

Unfortunately, despite these advantages, mini-grid power in India and Sub-Saharan Africa remains underused. For example, Smart Power India, with support from the Rockefeller Foundation, has helped to build over 140 (and counting) privately owned mini-grids across the country, representing the largest cluster of local generating capacity anywhere in India. And yet this is just a tiny fraction of the number of mini-grid systems (estimated at 100,000 to 200,000 in Africa alone) needed to meet projected demand over the next few years.

African communities are facing similar shortfalls. In April, the industry's first trade organization,

the Africa Mini-grid Developers Association, was established to spur the growth of mini-grids in Kenya and Tanzania, and eventually all of Sub-Saharan Africa. By 2020, the number of renewable mini-grid connections in these two countries is expected to climb from 12,000 to more than 145,000. Still, relative to Africa's massive energy needs, these are modest gains. In Nigeria, for example, 80 million people have no access to electricity, and another 60 million spend $13 billion annually to run polluting diesel generators, which could be displaced by mini-grids. Many other African countries are facing similar energy-related issues.

The good news is that funding for mini-grids – including those powered by solar, hydroelectric, wind, or a mix of renewables and diesel – is slowly increasing. In India, two mini-grid developers, Husk Power Systems and OMC Power, recently secured a total of $30 million in new investments, while Yoma Micro Power netted $28 million. In Africa, meanwhile, the World Bank has loaned Nigeria $350 million for rural electrification, while the International Solar Alliance is expected to secure a $2 billion line of credit from India to support projects in Africa, including mini-grids. These commitments come after Deutsche Bank announced a $3.5 billion fund in 2016 to help finance sustainable energy projects in Africa, including 10,500 solar mini-grids systems.

Additional financing will likely be secured as mini-grid designs and business models mature. One promising innovation is a "utility in a box" system – a modular, scalable mini-grid solution that is currently being field-tested in India and elsewhere.

Despite these positive developments, however, mini-grids' full potential to lay the foundation for rural economic development will remain unrealized until politicians, regulators, and international development practitioners embrace decentralized grids as viable, complementary, and inter-operable solutions to energy poverty, rather than sources of competition for traditional power utilities.

While a growing number of governments are adopting mini-grid policies, most are still failing to integrate localized generation and distribution into national electrification planning. In India, for example, a draft mini-grid policy has languished for two years, while in Sub-Saharan Africa, good intentions are often derailed by bureaucracy and lobbying from big power companies. Rural mini-grids are often required to operate without the financial backing that larger utilities regularly receive, despite providing equivalent or better service.

To turn the power on in India, Africa, and beyond, small energy producers need access to capital, and the support of policies that are impartial and fair. But, more than anything, they need the opportunity to put their technologies to work. The world already knows how to power rural communities; it's up to politicians to flip the switch.

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Source: https://www.weforum.org/agenda/2018/07/a-small-solution-to-one-of-our-biggest-problems

[EDC MEMBERS]



MBK JCL

RASUWAGADHI
HYDROPOWER CO. LTD.
रसुवागढी हाइड्रोपावर कं.लि.
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ENERGY



ARUN VALLEY
HYDROPOWER DEVELOPMENT CO. LTD
PRIVATE SECTOR INITIATIVE FOR HYDROPOWER PROJECT DEVELOPMENT

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Hydropower Pvt. Ltd.

Reliable
Hydropower Pvt. Ltd.

DIBYASWARI
HYDROPOWER LTD.
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CHHYANDI

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Simple Energy

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POWER NEPAL


Dudhkoshi Power Company Pvt. Ltd.
Kathmandu

RARA
HYDROPOWER
DEVELOPMENT
COMPANY

Gham
Power

CHF

NMB

LOTUS ENERGY
Solar Energy Systems

SANVIEnergy

Global IME Bank
The Bank For All

SUNFARMER

PRIME BANK LTD.

HBL
Himalayan Bank Ltd.

NABIL BANK

[EDC MEMBERS]

ICTC energy

AKSHAKWALA HYDROPOWER

UMH UNITED MODI HYDROPOWER

HIGH HIMALAYA HYDRO Construction Pvt. Ltd. (3HC)

COMTRONICS PVT. LTD.

Himalaya Hydropower Pvt. Ltd. Kathmandu, Nepal

Liberty Energy Company Ltd. लिबर्टी ईनर्जी कम्पनी लि.

nhe

EVEREST ELECTRICITY PVT. LTD. SM NEPAL

North Hydro & Engineering P. Ltd. Bijayapur, Nepal

EVEREST EQUITY

WAIBA

TSN

HIDCL

TW TRANSWELD TRANSFORMER

HGI

SUSHMIT ENERGY

HDC

NHA Nepal Hydropower Association

CPD Crystal Power Development Pvt. Ltd.

ANK ANAK HYDRO POWER CO. PVT. LTD

CENTURY BANK सेन्चुरी बैंक

COSMIC ELECTRICAL

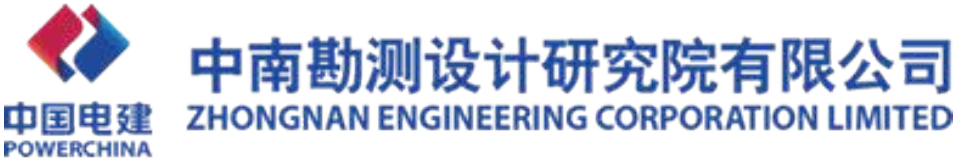
NEUPANE LAW ASSOCIATES

SINCE 1981 ABHINAWA LAW CHAMBERS advocates & legal consultants

HEC Kathmandu, Nepal 2003

[PARTNERSHIP]

Investment Board of Nepal
Government of Nepal



Energy Development Council (EDC) is a non-profit umbrella organisation of the entire energy sector of Nepal established to ensure every Nepali has access to energy and energy security by promoting favourable policies and investments. EDC consists of Energy Developers, Energy Associations, Energy Consumers, Energy Financiers and other funds, Consumer Institutions, Energy Contractors from both private and government sectors involved in hydropower, solar, wind and other renewables, generating more than 80 percent of the nation's total electricity.

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ENERGY™ DEVELOPMENT COUNCIL

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